PARTNERSHIP
FOR ADVANCED COMPUTING
IN EUROPE

Tiers 1 – Users needs and requirements

Chandan Basu (SNIC-LIU)

IRODS Workshop, Linköping University

PRACE Systems

Tier 0   Tier 1 (DECI)
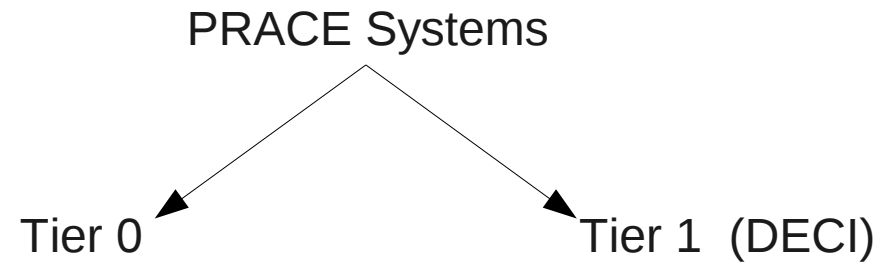
- DEISA Extreme Computing Initiative (DECI)

- Distributed European Infrastructure for Supercomputing Applications (DEISA)

Tier-1 Available Machines

Types of machines:

- IBM Blue Gene/Q and Blue Gene/P
- Cray XT and XE
- IBM Power PC, Power6
- Linux Clusters
- GPU clusters

Countries:

- Bulgaria, Czech Republic, Finland, France, Germany, Ireland, Italy, The Netherlands, Norway, Poland, Sweden, Serbia, Spain, Switzerland, Turkey and United Kingdom.

PRACE open calls

There are three types of call:

- Tire-0 call for applications – open every 6 months

To get only **CPU time** on one of the PRACE six **Tier-0** systems

- DECI (Tier-1) call for applications – open every 6 months

To get both **CPU time and expert help** up to 6 months on one of the many **Tier-1** systems across PRACE partners.

- Preparatory access calls – constantly open

We encourage you to apply for the preparatory access calls to get an **expert help** for 6 months to scale your code on **Tier-0** systems

IRODS Workshop, Linköping University

DECI – Important to Realize

In difference to Tier-0 DECI gives you similar amount of allocations as your own national center provides. Advantages:

- DECI proposes different architectures across EU

- DECI gives you possibility to apply for up to 6 months PRACE expert work on your applications' scalability.

- You can also apply for only up to 6 months expert work without CPU time – enabling work application.

IRODS Workshop, Linköping University

DECI Workflow

Before proceeding with the workflow, note the terminology:

1. HOME site – the site that originally had a contact with the PI while preparing the application for DECI call
    - The user can be from a country that is different from PRACE HOME site
2. EXEC site – the site where the accepted project will run, however in some cases the exec site = home site
3. Assigned expert – person assigned at to do the enabling of the project at the exec site. He/she can be from HOME site, from EXEC site or from another PRACE partner not active in the given call as site.
4. Expert at the home site – person at the home site that meets the PI f2f

DECI Workflow

- WP2 starts the DECI call procedure and collects the incoming applications

- T7.2 (A) evaluates the technical aspects of the applications using specific TE template (currently available on BSCW)

- WP2 sends the proposals together with TE to the Scientific Steering Committees (SSC) for evaluation

- After receiving the ranking from SSC, WP2 assigns the projects to the execution sites and informs applicants about the outcome and their access date/system

T7.2 : DECI Workflow (cont.)

- T7.2 (A) populates the DPMDB (DECI database) in accordance to the TE form. The link to the database is https://dpmdb.sara.nl/cgi-bin/dpm.pl
  - ✓ To have access to DPMDB you need X.509 certificate and the DN should be sent to Lilit who will gather and submit the final list of DNs

- T7.2 holds a teleconf after each DECI call and assigns one or two staff member to each accepted project for enabling

- From the access date T7.2 (B,C,D) start the enabling procedure

IRODS Workshop, Linköping University

DECI Production Services

DECI servicesallow all users to achieve their scientific objectives conveniently and efficiently

- The network services provided by the GEANT infrastructure

- The data services provided by Multi-Cluster GPFS and GridFTP

- The compute services provided by the batch scheduler available on each supercomputer

- the Authentication, Authorization and Accounting (AAA) services provided by GSI-SSH for interactive access, the DEISA User Administration System (DUAS) and the DEISA Accounting Report Tool (DART)

- the User services
  - ➢ DEISA Common Production Environment (DCPE)
  - ➢ the monitoring framework
  - ➢ DEISA Trouble Ticket System (DTTS)

DEISA Common Production Environment

- Common module environment deployed at all PRACE sites
  module load prace

- Common workspace setup
  $PRACE_ARCH – Architecture of local site
  $PRACE_HOME – The home directory (in PRACE GPFS if installed)
  $PRACE_DATA – User's data directory (in PRACE GPFS if installed)
  $PRACE_SCRATCH – Local scratch directory
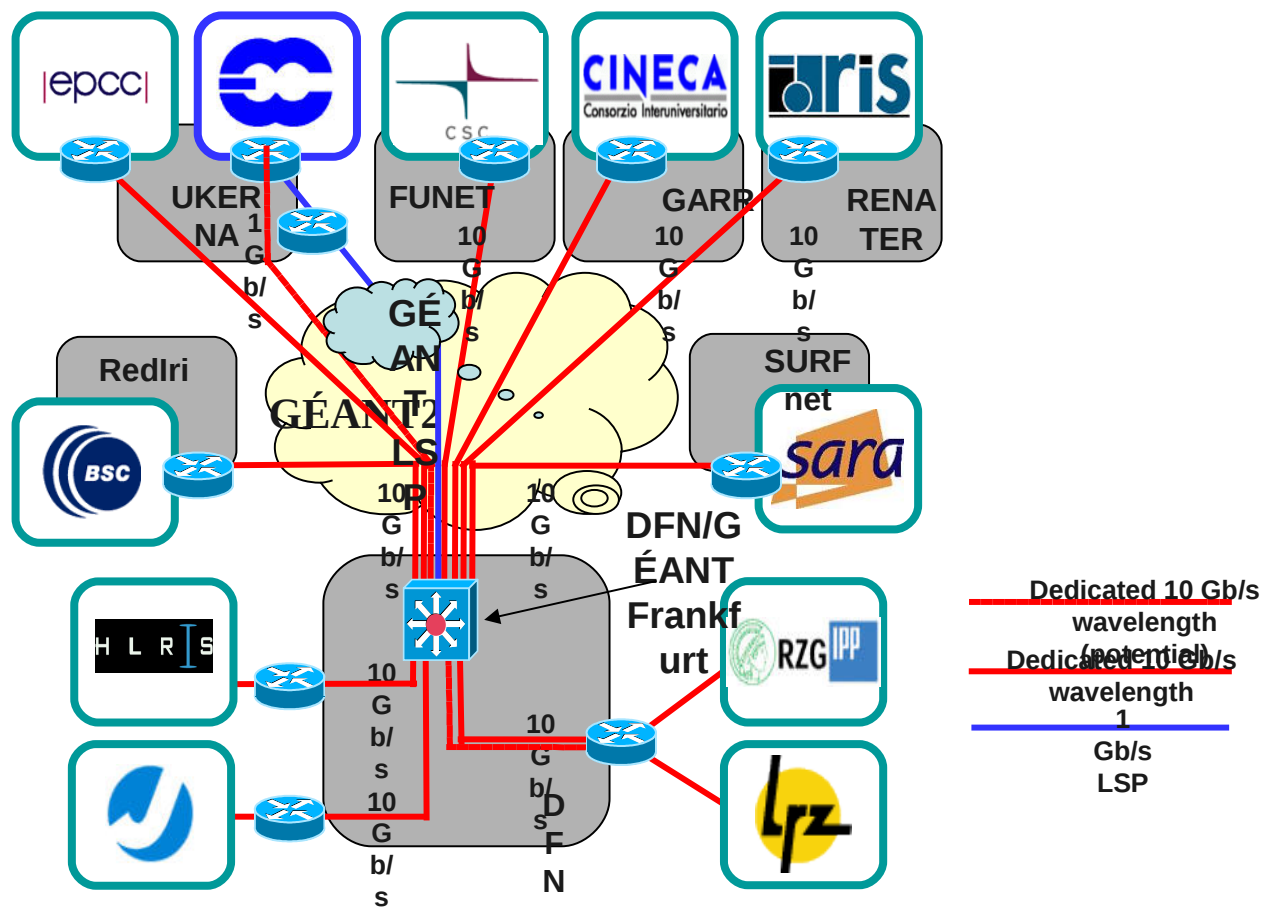
- Explains the exec site specific differences if any

Recent DECI Call Statistics

Host	Core hours	Discipline
PDC	60097514	Applied Mathematics, Astro Sciences, Bio Sciences, Earth Sciences, Engineering, Materials Science, Plasma & Particle, Physics
BSC	52687500	
FZJ	49438500	
UHEM	27075000	
RZG	24550000	
CSCS	24025000	
CSC	14680000	
CINES	11050000	
ICHEC	7218720	
SARA	7200000	
CINECA	7120000	
EPCC	3728000	

Storage Requirements

Storage	No. of Projects	Description
H	17	L: 1 – 100 GB M: 100 – 1000 GB H: > 1000 GB
M	27	
L	12	

IRODS Workshop, Linköping University

PARTNERSHIP
FOR ADVANCED COMPUTING
IN EUROPE

PRACE

PRACE internal network

IRODS Workshop, Linköping University

General Concepts of MC-GPFS

- MC-GPFS = Multiple Cluster General Parallel File System
- Each center runs own gpfs
- Distributed – shared – striped
- Kernel add-on for file system
- Shared and high performance access
- No special data transfer commands required
- Global visibility inside PRACE
- Safe and secure data

IRODS Workshop, Linköping University

IRODS Workshop, Linköping University
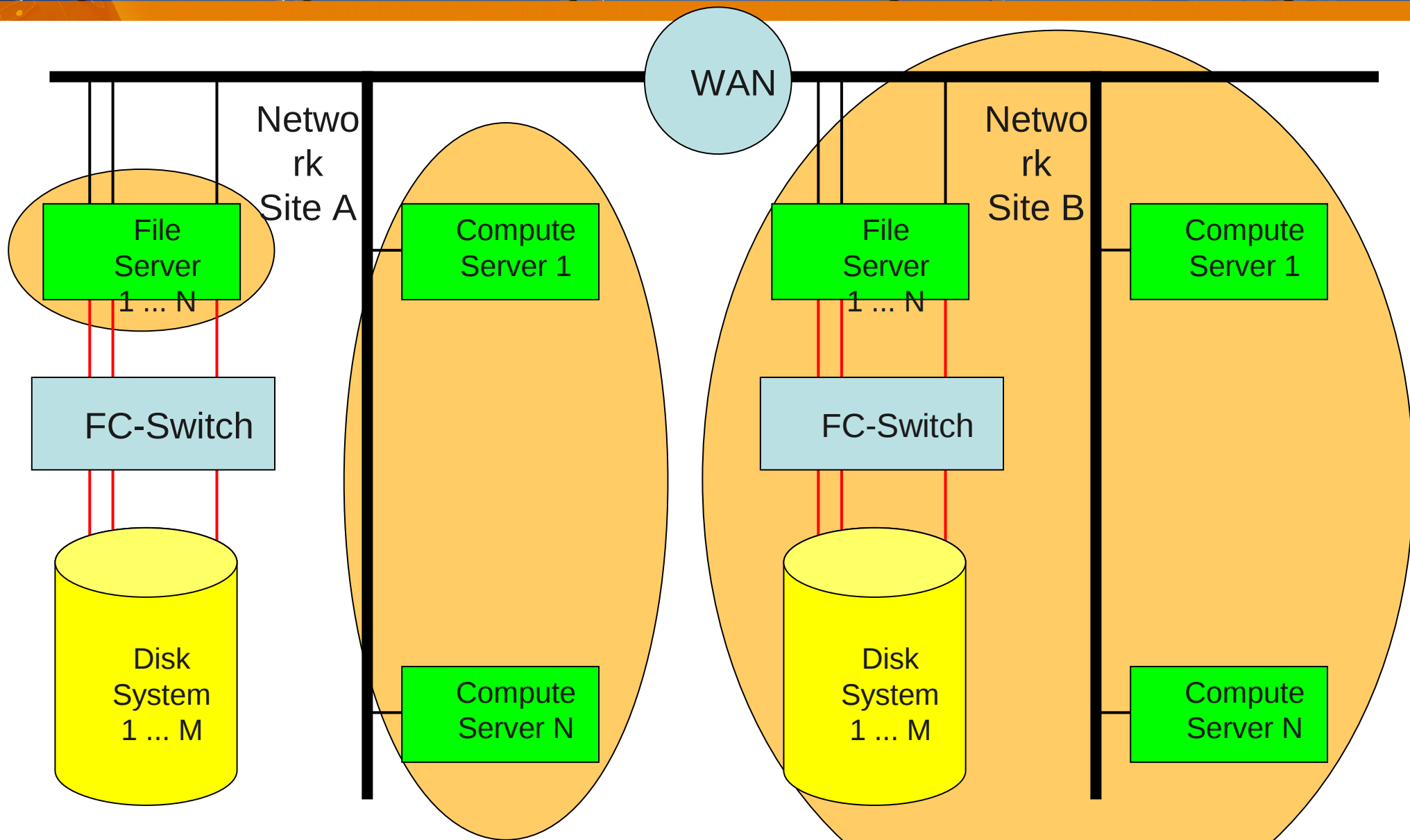
Data transfer

- Data transfer within PRACE machines
  - Within MC-GPFS
    - It has global view of files
  - From / to non MC-GPFS
    - gridftp
- Data transfer to / from outside machines
  - Transfer through the Door Nodes
    - gridftp
  - A Door Node has two network interfaces:
    - a public one, to accept connections to/from any location
    - a PRACE one, in order to reach every PRACE site
  - CINECA and LRZ

Data transfer

- Standard right now is gridftp (Globus in general)

  - Some users face problems

  - Need for other tools

  - PRACE is currently looking into other tools

- Sometimes users need other tools like ARC

  - Installation depends on site policy

SNIC in PRACE calls

All 6 centers are currently involved in PRACE up until 2013 September.

KTH	LiU	UmU	LU	UU	Chalmers
4	5	4	3	6	6
6	3	3	5	8	8

Experts that can help you with the application form:

PDC - Lilit Axner lilit(@kth.se

   NSC - Chandan Basu cbasu@nsc.liu.se, Soon-Heum "Jeff" Ko sko@nsc.liu.se

   HPC2N - Mikael Rännar mr@cs.umu.se, Jerry Eriksson jerry@cs.umu.se

   UPPMAX - Elias Rudberg elias.rudberg@it.uu.se

   LUNARC - Joachim Hein joachim.hein@math.lu.se

   C3SE – Luis Fazendeiro luis.fazendeiro@chalmers.se